

Name _____

Date _____

Period # _____

Speeding Around the Sun

Problem: How does a planet's distance from the sun affect its period of revolution?

Hypothesis:

Materials:

String (approx. 1.5m)

Straw (approx. 6cm)

Weight (washers)

Meter Stick

Stopper

Stopwatch

Safety Goggles

Procedure:

1. Use the planet model to show the relationship between a planet's distance from the sun and its period of revolution
2. Practice swinging the model planet over your head in a circular motion at a constant speed
* CAUTION * Stand away from other students! DO NOT let go.
3. Pull the string so the stopper is 20cm from the plastic tubing. Swing the stopper fast enough to keep it moving.
4. Time how long it takes for the stopper to make 10 revolutions. Record this time (to the nearest 10th of a second) on the table in the box for "Trial 1."
5. Repeat step 4 two more times. Record your results in "Trial 2" and "Trial 3." Calculate the average time. Then divide the average time by 10 to find the time it takes for each revolution.

Procedure (Cont...)

6. Pull the stopper out to 40cm and repeat steps 3-5.
7. Pull the stopper out to 60cm and repeat steps 3-5.
8. Cleanup.

Data:

| Distance (cm) | Trial 1 (s) | Trial 2 (s) | Trial 3 (s) | Average $\frac{(T_1 + T_2 + T_3)}{3}$ | Time per Revolution AVG/10 |
|---------------|-------------|-------------|-------------|---------------------------------------|-------------------------------|
| 20 | | | | | |
| 40 | | | | | |
| 60 | | | | | |

Conclusion: